

Phlebotomy and Collection of Venous Samples for Determination of Exposure to Chemical Agents (Terrorism and/or Accident)

Collect as soon as possible after exposure

(Adapted from AABB Technical Manual, 13th Edition, American Association of Blood Banks, 1999)

This general phlebotomy procedure is adapted to name the blood collection tubes specified by the Centers for Disease Control (CDC), and assumes a normal clinical setting.

General Principles

Blood is to be collected only by trained personnel using aseptic methods, and working under the direction of a qualified licensed physician. Correct identification is essential in each step, from patient registration to final disposition of each component. A numeric or alphanumeric system must be used that links the patient, the patient record, and all specimens collected from that patient. Use extreme caution to avoid any mix-up or duplication. If more than one skin puncture is needed, a new needle and new tube must be used. The needle and any blood-contaminated waste must be disposed of safely, in accordance with universal precaution guidelines. The needle must not be recapped unless a safety-recapping device is used, and disposal of the uncapped needle must be into a puncture-proof container. Observe all institutional requirements for needle safety.

Blood should be drawn from a large, firm vein in an area (usually the antecubital space) that is free of skin lesions. While a tourniquet makes the veins more prominent, it should not be applied continuously. If it takes more than 30 seconds to select a vein, release the tourniquet while cleansing the site. Having the patient open and close the hand a few times is also helpful. There is no way to make the venipuncture site completely aseptic, but cleanliness is important for both the patient's safety and the integrity of the sample. After preparing the skin, do not touch it again to re-palpate the vein. The entire site preparation must be repeated if you touch the venipuncture site.

Materials

1. Evacuated blood collection tube, EDTA anticoagulant (**Lavender-top tube**), 7 ml or 5 ml (BD Vacutainer 366454, or equivalent)
2. Evacuated blood collection tube, NaF anticoagulant (**Gray-top tube**), 7 ml or 5 ml (BD Vacutainer 367729, or equivalent); or
Evacuated blood collection tube, NaHeparin anticoagulant (**Green-top tube**), 7 ml or 5 ml (BD Vacutainer 367676, or equivalent)
3. Multiple sample blood collection needle, 21x1 (BD Vacutainer 367212, or equivalent)

4. Collection tube holder (BD Vacutainer 364893, or equivalent)
5. Disposable tourniquet (BD Vacutainer 7200, or equivalent)
6. Alcohol prep pad (Fisherbrand 06-669-62, or equivalent)
7. Gauze sponge, 2x2 (Fisherbrand 22-362178, or equivalent)
8. Adhesive strip bandage, 3/4x3 (NutraMax 15-200, or equivalent)
9. Evidence/forensic tape. (The tape can be purchased from National Law Enforcement Supply (www.ngscorp.com) or any other suitable vendors)
10. Chain of Custody form. (Provided by local public health lab.)
11. Local public health laboratory submittal form.

Procedure

1. Each patient should be assigned a unique identifier consisting of zip code of the facility, 2-letter facility identifier, and patient medical record number. (Example; Fresno Community Hospital – 93721FC999999)
2. For each patient, label three purple-top tubes and one gray- (or green-) top tube with the patient's unique identifier. The labels should include at least the following information: Specimen identification number, Collector's initials, and Time and Date of collection. Please do not include the patient's name.

All of these tubes are needed for a complete chemical agent characterization, and none of them may be opened. If blood is needed for other procedures, add appropriate tubes. NOTE: The shipment of specimens must include at least one empty tube from each lot number used. These will be used as blanks.

3. Gather the tourniquet, alcohol wipe, sterile multi-use needle, correctly labeled evacuated tubes, gauze and tape or bandage. If necessary, join the needle to the tube holder and place the first tube loosely in the tube holder.
4. Position the patient so that their arm is nearly horizontal and comfortably extended. Apply the tourniquet or blood pressure cuff. Identify the venipuncture site, and quickly scrub it and the surrounding skin with an alcohol wipe.
5. Uncap the needle. Hold it in line with the vein, and in one smooth motion, pierce the skin a few millimeters distal to the optimal vein location, enter the vein and place the needle securely in the lumen of the vein.
6. Securely holding the tube holder, fully seat the specimen tube. Observe that blood flow is adequate. If flow is inadequate, try making minor adjustments to the needle position. The needle may not have fully entered the vein, or may have gone into the opposite wall, or the vacuum may have pulled the wall against the needle bevel. Often pulling back slightly will initiate good flow. If blood flow is brisk, release the tourniquet for the comfort of the patient.

7. As each tube fills, replace it with the next. Gently invert the tubes to mix the anticoagulant.
8. After all tubes are filled, release the tourniquet, if this has not already been done. Place the folded sterile gauze over the puncture site, withdraw the needle, and immediately apply firm pressure to limit bleeding. (The patient may be instructed to continue application of pressure for several minutes.) Dispose of the needle properly. Check the puncture site and apply a bandage, to keep the site clean, after all bleeding stops.
9. Be sure that the patient is comfortable, then secure the tubes with evidence tape. The evidence tape should be attached to one side of the tube, go over the top, and be attached to the other side, not simply wrapped around the tube cap.
10. Begin the Chain of Custody form, making sure to use your full name (No nicknames) and date and time, as well as when and where you store the specimens.
11. Store specimens at 4°C, in a locked refrigerator if possible. Be sure that the chain of custody and submittal forms are completely filled out and kept with the specimens at all times.
12. Notify your local public health laboratory that specimens are ready for pick-up.